

Quiz 1

Instructions: Show your work and explain every step.

- (1) (9 points) Express the following as a formula and find its negation and its contrapositive. Indicate which is which.

If m is an even integer, then there exists an integer k such that $m = 2k$.

- (2) Prove or disprove the following (i.e. if the statement is true, prove it, and if the statement is false, write down a counterexample). Write down the method of proof you're using.

(a) (6 points) The set $\mathbb{R}^+$ of positive real numbers has no smallest element.

(b) (5 points) If x and y are irrational, then x^y is irrational.